

## 2. The Costs Of Underground Structure

The Commission's tentatively proposed values for the costs of underground structure are excessive because they fail to exclude manhole costs from the costs of underground distribution. As AT&T and MCI WorldCom previously demonstrated, to the extent that "underground" distribution plant exists, it typically runs only a short distance (*e.g.*, from the FDI to a block terminal, or under a street when connecting two poles or two buried cable runs) and thus requires no manholes or pullboxes.<sup>45</sup> Indeed, the Commission's *Further Notice* recognized that manhole and pullbox costs are associated only with *feeder* plant, not *distribution* plant. *Further Notice*, ¶ 104 ("[u]nderground structure consists of trenches and conduit, and for *feeder plant*, manholes and pullboxes") (emphasis added). Thus, manhole costs should be excluded from underground distribution in the synthesis model.

If the Commission nonetheless retains manholes for copper distribution plant, it should be understood that the manhole need only accommodate one copper splice. In addition, since copper distribution cables tend to be small, the single splice also will be small. Thus, should the Commission call for distribution manholes, AT&T and MCI WorldCom recommend the use of a Polyethylene Structural Foam Buried Cable Closure, with a material cost of \$215.00 (as quoted by Sue Smith, a PenCell Plastics, Inc. sales representative) and an installation cost of \$220.00.<sup>46</sup>

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<sup>45</sup> HAI Inputs Portfolio (Jan. 27, 1998) at 31.

<sup>46</sup> *E.g.*, the PenCell PEM-2436 Buried Cable Enclosure, which is 35"W x 47"L x 24" high. See information at PenCell's Website at <http://www.pencell.com/PEM-2436.html>.

### 3. Distribution Plant Mix

The default values for distribution plant mix tentatively adopted by the Commission call for too much underground cable, and too little aerial cable. *See Further Notice*, ¶¶ 116-19, App. A at 4. It is critical that the Commission redress this problem because the cost of installing underground and aerial facilities varies greatly, and the relative proportions of these types of plant therefore is a prime determinant of total network costs.

The HAI sponsors believe that the HAI default values for distribution plant mix properly reflect the mix of aerial, buried, and underground cable that an efficient competitor would use in different density areas. Their research indicates that aerial cable is still the dominant form of cable structure in all density areas. As Bellcore notes, “[t]he most common cable structure is still the pole line. Buried cable is now used wherever feasible, but pole lines remain an important structure in today’s environment.”<sup>47</sup> Indeed, cable *normally* is placed on existing poles whenever they are available because buried or underground plant typically present more costly alternatives.<sup>48</sup> By contrast, underground cable primarily is used for *feeder* and interoffice transport, not for *distribution*.<sup>49</sup> Even in high density areas, “underground” distribution plant typically runs only a short distance.<sup>50</sup>

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<sup>47</sup> Bellcore, *BOC Notes on the LEC Networks* – 1994, p. 12-41.

<sup>48</sup> In the two densest urban zones, HAI assumes a higher proportion of both intrabuilding network cable and cable attached to the outside of buildings, and therefore increases the percentage of aerial cable in these two zones to reflect that assumption.

<sup>49</sup> HAI Inputs Portfolio (Jan. 27, 1998) at 31

<sup>50</sup> *Id.*

As a result, such distribution plant is properly classified to the aerial or buried cable account, not to the underground cable account.<sup>51</sup>

The HAI distribution plant mix default values correctly reflect the more extensive use of aerial distribution cable relative to underground distribution cable. Specifically, the percentage of distribution plant mix assigned to aerial cable ranges from 25 percent in low density areas to 85 percent in high density areas, and the percentage of underground cable ranges from 0 to 10 percent. The Commission's tentatively proposed values, however, range from 40 to 10 percent for aerial cable, and 0 to 90 percent for underground cable.<sup>52</sup> Thus, in the lowest several density zones, where underground plant likely is nonexistent, the Commission proposes non-zero amounts, and in the highest density zone, the HAI sponsors have proposed a default value for underground cable of 10 percent, but the Commission has tentatively proposed a value of 90 percent. Similarly, the HAI sponsors have proposed a default value for aerial cable of 40 percent, but the Commission has tentatively proposed a value of only 10 percent.

These large disparities cannot be squared with forward looking principles. The only company to provide separate plant mix values for distribution and feeder plant –

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<sup>51</sup> Part 32 plant accounts do not classify intermittent use of conduit placement as underground structure. Rather, if conduit is employed simply to bypass an obstacle or to connect together otherwise unencumbered runs of aerial or buried plant, it is booked to the aerial or buried account.

<sup>52</sup> If the Commission's decision is based on "Figure 12-8, Cable Construction Distribution (Not Including Bridged-Taps)" in *Belcore Notes on the Networks* (Dec. 1997 at 12-12), its reliance on this source is misplaced. The use of the term "Distribution" on this chart refers to the distribution *network*, not distribution *cable*. Instead, it represents all copper cable pairs close to the central office, most of which are feeder cable pairs, not distribution cable pairs. *See id.* at 12-1 ("The distribution network is divided into two major parts: feeder and distribution plants.")

BellSouth – submitted data showing that the *maximum* percentage of underground distribution plant in any of its 9 states was a mere 2 percent.<sup>53</sup> This figure is dramatically less than the results implied by the current synthesis model assumptions.<sup>54</sup> Accordingly, the only available data in the record on distribution plant mix confirm that the Commission's proposed values are excessive, and that the HAI values are more than reasonable.

In addition, while AT&T and MCI WorldCom agree that a large proportion of *feeder* cable in high density zones would be in underground conduit and manholes, a high percentage of underground distribution cable could not exist in high density areas without a very large high density FDI located on streets, alleys, or on private property, or inside one building and feeding others. Because there is little outdoor real estate available for large high density FDIs, most are placed in the basement of buildings, and generally accepted practices avoid serving one building from another because building owners have concerns about security (*e.g.*, line tapping) and denial of access by the owners of other buildings.<sup>55</sup>

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<sup>53</sup> Specifically, BellSouth's response to the Commission's Universal Service Data Request issued July 9, 1997 and filed by BellSouth in September, 1997 shows the following percentages for underground distribution: Alabama, 1 percent; Florida, 2 percent; Georgia, 0 percent; Kentucky, 1 percent; Louisiana, 1 percent; Mississippi, 0 percent; North Carolina, 1 percent; South Carolina, 1 percent; Tennessee, 0 percent.

<sup>54</sup> For example, the underground distribution percentage calculated by the synthesis model for BellSouth-Florida is 24 percent – *i.e.*, 12 times the value filed by BellSouth in response to the Commission's data request.

<sup>55</sup> The Commission also states that "[t]he synthesis model does not design outside plant that contains either riser cable or block cable, so we do not believe it would be appropriate to assume that there is as high a percentage of aerial plant in densely populated areas as the HAI default values assume." *Further Notice*, ¶ 119. *Proponents* of the HAI Model believe that riser cable plays the role of distribution cable in a notable (continued . . .)

## F. Structure Sharing

The structure sharing percentages for aerial, buried, and underground cable tentatively adopted by the Commission assign too much structure cost to the LEC, especially in the low density zones.<sup>56</sup> As described in the HAI Inputs Portfolio, sharing opportunities already are widely available in all density zones and for all three types of structure, and their availability is increasing even further due to advances in technology and changes in the regulatory environment.<sup>57</sup> As a result, the Commission's tentatively proposed structure sharing percentages would overcompensate the LECs for their structure costs and distort the competitive marketplace.

As an initial matter, the structure sharing percentages adopted by the Commission should plainly be based on forward-looking principles, not the incumbent LECs' embedded sharing practices. *See Further Notice*, ¶ 20 (the cost model should "reflect forward-looking technology or design choices"). The degree of sharing in the incumbent

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(continued . . .)

percentage of cases in the two highest density zones. Responses to the Commission's August 1997 Data Request indicate that most large incumbent LECs provide riser cable as a regulated investment. Should the Commission continue to exclude distribution cable that is riser and block cable, then such investment should be excluded in its entirety. AT&T and MCI WorldCom believe that an appropriate structure allocation for density zone 5,000-10,000 lines per square mile should be 5 percent underground, 35 percent buried, 25 percent aerial, and 35 percent block and riser distribution cable. For greater than 10,000 lines per square mile, the structure allocation should be 10 percent underground, 5 percent buried, 20 percent aerial, and 65 percent block and riser cable.

<sup>56</sup> *See Further Notice*, ¶ 129 (tentatively assigning "50 percent of [aerial] structure cost in density zones 1-6 and 35 percent of the costs in density zones 7-9 to the LEC," and, for underground and buried structure, tentatively assigning "90 percent of the cost in density zones 1 and 2, 85 percent of the cost in density zone 3, 65 percent of the cost in density zones 4-6, and 55 percent of the cost in density zones 7-9 to the LEC").

<sup>57</sup> HAI Inputs Portfolio (Jan. 27, 1998) at App. B.

LECs' embedded network merely reflects the sharing decisions made by the incumbent LECs when they were faced with the incentives of a ratebase-regulated utility in a monopoly environment. It thus substantially understates the amount of sharing that will exist in a forward-looking, competitive market in which parties have increased incentives and opportunities to reduce costs by sharing structure.<sup>58</sup> On a going-forward basis, structure sharing will be promoted not only by competitive forces, but also by regulatory devices, such as the Telecommunications Act of 1996, which requires attachers to pay for two-thirds of the non-usable space on poles, ducts, conduits, and rights-of-way. 47 U.S.C. § 224(e). This two-thirds requirement shows that Congress believed at least three parties would use the incumbent LECs' outside plant structures, and thus provides for compensation on that basis. In addition, more and more municipalities are adopting similar regulations that require utilities and telecommunications companies to share their structures.<sup>59</sup> Further, builders often provide trenching in new subdivisions for use by cable, electric, and telephone companies to facilitate placement of wires and to minimize cable cuts.<sup>60</sup> In this case, the incumbent LEC pays *none* of the cost of trenching.<sup>61</sup>

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<sup>58</sup> See, e.g., Florida PSC Sep. 23, 1997 Comments at 8 (there should be more sharing of structure in the future).

<sup>59</sup> See, e.g., "Policy Relating to Grants of Location for New Conduit Network for the Provision of Commercial Telecommunications Services," Public Improvement Commission of the City of Boston (April 28, 1994); see also "A Nation Plugged In and Dug Up," Washington Post (July 15, 1999) at A1, A16 ("Other cities, notably San Francisco, have recently adopted ordinances encouraging companies to work together to minimize disruptions.")

<sup>60</sup> See HAI Inputs Portfolio (Jan. 27, 1998) at App. B, p. 156.

<sup>61</sup> *Id.*

The Commission's tentatively proposed sharing percentages for aerial cable – which assign up to 50 percent of the structure cost to the incumbent LEC – cannot be reconciled with these forward-looking realities. As AT&T and MCI WorldCom have previously explained, roughly half the space on a 40 foot pole is typically used by power companies (who need significant space for intercable separation) and the rest is used by low voltage users, including telecommunications carriers and CATV providers. Thus, when three parties (the power company, the incumbent LEC, and the CATV provider) make use of this structure, the power company uses 50 percent of the available capacity, and the incumbent LEC and the CATV provider use a maximum of 25 percent each. Accordingly, the incumbent LEC should be assigned a maximum of 25 percent of aerial costs. And, given CATV penetration rates and the fact that CATV companies generally have leased low voltage space on poles rather than install their own facilities, such three-way sharing should be found in all but the lowest density zone.

The Commission's tentatively proposed sharing percentages for buried cable – which assign up to 90 percent of the structure cost to the incumbent LEC – are likewise unsupportable. The low amount of buried cable sharing predicted by these percentages is contradicted by *ex parte* evidence showing that cable plows bury more than one cable simultaneously,<sup>62</sup> and by the deposition of a U S West witness in Washington State that stated, "Power is plowing in and we're going in the plow with them."<sup>63</sup> It also ignores evidence that builders often facilitate the placement of wires and minimize the costs of

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<sup>62</sup> See MCI WorldCom Sept. 18, 1997 *ex parte*.

<sup>63</sup> See Deposition of Genie Cervarich at 41. *Pricing Proceeding for Interconnection, Unbundled Elements, Transportation and Termination, and Resale*, Docket Nos. UT-960369, UT-960370, and UT-960371 (Apr. 18, 1997).

cable cuts by providing trenching in new subdivisions – free of charge – to cable, electric, and telephone companies.<sup>64</sup> And it ignores the statement by Anchorage Telephone Utility that it shares trench space with two local electric companies.<sup>65</sup> In light of this record evidence, there is no reasonable basis for the Commission to conclude that LECs can share only a small fraction of buried structure costs with other users.

Finally, the Commission's tentatively proposed sharing percentages for underground cable – which assign up to 90 percent of the structure cost to the LEC – are also unsustainable. In most cases, underground cable is the most expensive type of investment per foot of structure, and, for this reason alone, presents users with the *greatest* incentives for sharing its costs. The costs of obtaining the necessary permits and digging up and repairing streets are so high that efficient competitors will attempt to share these costs with other parties, and will be able to do so in most instances because increased competition will multiply the number of parties seeking to share structure.<sup>66</sup> In addition, as described above, some municipalities have adopted ordinances encouraging companies to work together to minimize disruptions. Thus, not surprisingly, major cities such as New York, Boston, and Chicago already are experiencing increasing instances of conduit sharing, and one conduit owner in New York already has over 30

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<sup>64</sup> See HAI Inputs Portfolio (Aug. 1, 1997) at 16; *id.* at Appendix B, pp. 131-132.

<sup>65</sup> See *Anchorage Telephone Utility's Request for Partial Waiver of Data Submission*, CC Docket No. 96-45 (Aug. 8, 1997). Anchorage states that it is billed for 45 percent of the trenches.

<sup>66</sup> Indeed, the decision of a utility to place expensive underground conduit frequently is driven by the expectation that this extra cost will be recouped through increased opportunity to lease ducts to other users.



telecommunications providers sharing its structure.<sup>67</sup> In light of this evidence, the Commission cannot reasonably conclude that efficient LEC's only will be able to share as little as 10 percent of their underground structure on a going-forward basis.

#### **G. Digital Loop Carrier Costs**

The DLC costs tentatively adopted by the Commission significantly overstate the actual costs of DLC equipment. These costs are inflated because they are derived from incumbent LEC data that supposedly are "based on actual costs incurred in purchasing DLCs," *Further Notice*, ¶ 144, but which in fact are totally unsupported by any such verifiable evidence and, indeed, are flatly refuted by the very contract information proffered by the incumbent LECs.

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<sup>67</sup> HAI Inputs Portfolio (Jan. 27, 1998) at App. B, p. 156-57.

<sup>68</sup> Specifically, AT&T and MCI WorldCom investigated the DLC cost submissions of Ameritech, Bell Atlantic, BellSouth, GTE, Aliant, and Sprint.

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<sup>69</sup> Marconi Communications was previously known as RELTEC Corporation.

<sup>70</sup> See Exhibit B; see also, e.g., Agreement No. PR-7246-B, Amendment #2, Appendix B, Page 2 of 9 (July 31, 1994).

<sup>72</sup> Indeed, some incumbent LECs (*e.g.*, GTE and Aliant) have proposed DLC costs that are so exorbitant they are economically inconsistent with observed incumbent LEC practices of choosing to provision loop feeder on DLC when feeder lengths exceed 9 to 12 kilofeet.

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### III. SWITCHING AND INTEROFFICE FACILITIES

#### A. Switch Costs

##### 1. Switch Cost Data

HAI switch input values provide the best available estimates for forward-looking switch costs. Contrary to the Commission's suggestion in the *Further Notice* (§ 152), the proposed HAI switch input values have been reinforced by a variety of sources, including public information submitted by incumbent LECs in state proceedings and to this Commission, and public cost information issued by switch manufacturers. See AT&T Jan. 7, 1999 *ex parte*; AT&T Apr. 22, 1999 *ex parte*. Indeed, these sources confirm per line switch costs that in many instances are *lower* than the HAI default values. For example, the incumbent LECs' witness, Jerry Hausman, testified before the California PSC that "the prices of new . . . switches are in the \$70 per line or lower range" See AT&T Jan. 7 1999 *ex parte* (emphasis added) (excerpting testimony). And in the Commission's Bell Atlantic-NYNEX merger proceeding, a Bell Atlantic witness whose responsibilities include "planning and engineering Bell Atlantic central office switches" affirmed that Bell Atlantic could "install a new Lucent 5ESS switch" with 60,000 lines for "total costs of the hardware and software . . . as low as \$55 to \$60 per line." See Declaration of Nancy Sayer on behalf of Bell Atlantic, In re NYNEX corp. and Bell Atlantic Corp. Application for Consent to Transfer of Control, Tracking No. 960205, 960221, (Oct. 22, 1996) at §§ 1, 11 (emphasis added) ("Sayer Declaration").

These figures show that HAI switching input values are *conservative*, and that the Commission is fully justified in relying on them as the most accurate indicator of

forward-looking switching costs. As AT&T and MCI WorldCom have explained, *see* AT&T Oct. 17, 1997 Comments at 15-16, the HAI input values are drawn from a broad range of companies in diverse geographic regions, and thus are more likely to accurately model the current price levels that LECs pay for switches.

For similar reasons, AT&T and MCI WorldCom are concerned that the data on switch costs provided by Gabel/Kennedy must be adjusted for time trends in order to model efficient forward-looking costs. *See Further Notice*, ¶¶ 166-68. As the Commission's own description notes, those data are largely based upon prices for switches "installed between 1983 and 1995," *id.* at App. E-1, and thus reflect prices that are out-of-date and based on older technology and embedded switch deployment architecture. As the incumbent LECs' trade association conceded recently in another proceeding, "[c]osts [for central office switches] have been driven down rapidly by advances in digital technology. On a per-line basis, prices declined over 60 percent from 1986 to 1996 and were projected to fall another 12 percent by 2000." USTA Comments, CC Docket 96-98 (May 26, 1999), "UNE Fact Report," by Peter W. Huber & Evan T. Leo, at I-28 (citing, *inter alia*, Northern Business Information, *U.S. Central Office Equipment Market: 1996 Database, Version 1.0* at 27 (Jan. 1997) (source of HAI switch input values)); *see* GTE Comments, CC Docket 96-98, (May 26, 1999) at 45 (same). Because the Commission's depreciation data, in particular, rely heavily on older switches, it is critical that the Commission also examine more current price structures like those found in forward-looking vendor contracts. *See* AT&T Apr. 22, 1999 *ex parte*. As AT&T and MCI WorldCom have documented, *see id.*, those contracts demonstrate that the Gabel/Kennedy data significantly overstate switch costs.

If the Commission nonetheless chooses to rely on this historical price information, AT&T and MCI WorldCom agree with the Commission that the Gabel/Kennedy depreciation data and the RUS data should be melded (so long as appropriate adjustments are made to the RUS data, *see infra*), because the RUS data are the only information on the cost of switches with less than 1,000 lines. *See Further Notice*, ¶ 162. It should be noted, however, that given the extremely small size of the RUS carriers, one would expect that the discount they receive in purchasing switches would be significantly smaller than that of the non-rural companies for which the synthesis model is intended.

Notwithstanding their limitations, the combined Gabel/Kennedy RUS data are superior to the 1997 Data Request submissions and the incumbent LECs' proffered Workshop data. *See Further Notice*, ¶¶ 155-56. The latter sets of data are less reliable since they are drawn from fewer companies. The Workshop data, in particular, as AT&T and MCI WorldCom have previously explained, *see* AT&T Mar. 10, 1999 *ex parte*, are unreliable (drawing from only three companies), contain numerous inconsistencies, rely on historical and embedded costs, and were modified using undocumented and unexplained methods.<sup>73</sup>

## **2. Adjustments To The Data**

If the depreciation and RUS data are to be used, then AT&T and MCI WorldCom agree with the Commission that the RUS data must be modified to account for the costs

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<sup>73</sup> For example, BellSouth made modifications to these data to "estimate" and remove ISDN costs. *See* BellSouth Jan. 29, 1999 *ex parte*. But BellSouth provided no information in any public or proprietary data submissions that would enable another party to review and verify any of these "estimations" or the resulting switch investment modifications. Because it is impossible on the current record to determine whether such adjustments were appropriate or accurate, the Commission should not rely on these data.

of the main distribution frame ("MDF") equipment, power, and telephone company engineering to make them consistent with the depreciation data that include these costs. *See Further Notice*, ¶ 157. AT&T and MCI WorldCom also agree with the Commission that \$12 per line is a reasonable figure for MDF-associated costs involving copper feeder loop terminations. *See Further Notice*, ¶ 158; AT&T Jan. 7 1999 *ex parte* at 2 n.1.

AT&T and MCI WorldCom do not agree with the Commission, however, that the 8 percent engineering adjustment should be applied to power costs. *See Further Notice*, ¶ 161. Costs for power investment already include the labor costs for installation. Thus, while the Commission should apply the engineering adjustment to switch investment, it should not apply the adjustment to power estimates.<sup>74</sup> Furthermore, the proposed adjustments for power costs (*id.* ¶ 159) are substantially higher than HAI proposed inputs, and should be reduced.<sup>75</sup>

### **3. Accounting For Changes In Cost Over Time**

Given the undisputed and significant decreases in switch prices over the last several years, *see supra*, AT&T and MCI WorldCom agree with the Commission's proposal to restate older switch prices contained in the data set into 1997 terms. *See Further Notice*, ¶¶ 166, 168. Specifically, AT&T and MCI WorldCom agree with the Commission's proposal to adjust the regression forms to account for the technological

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<sup>74</sup> The Commission also proposes to add \$27,598 as the average cost of terminating a remote on a host switch. *Further Notice*, ¶ 160. The documentation relied on for that figure in the NRRI study is unclear. For example, that figure may include certain equipment costs associated with the circuit facilities that already have been included in the model within the costs of interoffice transport. The Commission therefore should forego this addition until more detail is provided and the figure can be verified.

<sup>75</sup> *See* AT&T Jan. 7, 1999 *ex parte* at 2 n.1.

improvements reflected in forward-looking switch costs. *Id.* The Commission also is correct in rejecting Ameritech's and GTE's proposal to rely on the Turner Price Index to accomplish this necessary adjustment. As one incumbent LEC has conceded, that index simply is not intended to account for "technology changes or productivity improvements." See AT&T Jan. 7, 1999 *ex parte* at 5 (quoting BellSouth USF Responses to FCC Staff Questions of June 25, 1998, Question 2, page 1 of 2 (filed Aug. 7, 1998)). It also is inappropriate to use the Commission's suggested reciprocal functional form for the effects of time, rather than the standard logarithmic functional form.<sup>76</sup>

No adjustments to the switch input values currently are needed to account for the possible "increased use of packet switches." See *Further Notice*, ¶ 169. Although packet switches are anticipated to result in substantially lower costs for switching of voice-grade services at some point in the future, those switches have not yet proven technically capable of providing the full range of voice-grade services on the scale that circuit switches provide, and are not widely used for those types of services today. Accordingly, it is now too early and speculative to attempt to model the "potential impact" (*Further Notice*, ¶ 169) of packet switches, and the Commission should reserve the question for future models.

#### **4. Switch Cost Estimates**

The Commission proposes to adopt a fixed cost of \$186,400 for remote switches, a fixed cost of \$447,000 for host or stand-alone switches, and variable costs of \$83 per line for all switch types. *Further Notice*, ¶ 173. While AT&T and MCI WorldCom agree

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<sup>76</sup> See AT&T March 30, 1999 *ex parte*.



that it is appropriate to adopt the same per-line variable costs for all switch types, they believe that each of the proposed inputs is significantly overstated. Not only are the proposed figures higher than most of the public data that AT&T has provided in its *ex parte* filings, they also are higher than estimates provided by many of the incumbent LECs. Thus, while Bell Atlantic's employee responsible for switch planning advocated costs of about \$55 to \$60 per line, the Commission's proposed figures, even after making the necessary adjustments for MDF, installation, and power, are \$81 per line for a 20,000 line host/stand-alone switch and \$130 per line for a 2,000 line remote switch.<sup>77</sup> Because the publicly available data from the most current sources – most notably forward-looking prices from vendor contracts – contain much lower figures for switch costs, the Commission should modify its proposed figures to conform with these sources.<sup>78</sup>

#### **B. Other Switching And Interoffice Transport**

AT&T and MCI WorldCom agree with the Commission that if it relies upon the depreciation and RUS data, those data, once appropriately adjusted, include all relevant costs to make the switch functional. *See Further Notice*, ¶ 178. Therefore, the Commission correctly proposed to set the MDF/Protector investment per line and power input values at zero and the Switch Installation Multiplier at 1.0. *Id.*

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<sup>77</sup> The calculation for the host/stand-alone is:  $\$447,000/20,000 \text{ lines} + \$83 = \$105$  per line total cost. Adjusting for installation (removing 8 percent = \$8), MDF costs (\$12 less per line), and power ( $\$74,500/20,000 = \$4$ ) results in \$81 per line in total costs. The calculation for the remote switch is:  $\$186,000/2,000 \text{ lines} + \$83 = \$176$  per line total cost. Adjusting for installation (removing 8 percent = \$14), MDF costs (\$12 less per line), and power ( $\$40,000/2,000 = \$20$ ) equals \$130 per line in total costs.

<sup>78</sup> A further reason why the Commission's proposed switch costs exceed incumbent LEC stated costs is because the latter incorporate the substantial switch cost savings the incumbent LEC enjoys from its use of IDLC.

AT&T and MCI WorldCom disagree with the *Further Notice*'s proposal (§§ 179-81) to set the analog line circuit offset for digital lines to zero. Based upon a review of ARMIS data, *see* ARMIS Infrastructure Report 43-07 (identifying digital lines served via copper and fiber), the Commission's proposed data set assumes that the percent of total working lines that are served by DLCs is 18.3 percent.<sup>79</sup> Moreover, because a substantial portion of these embedded DLC lines are likely universal DLC ("UDLC"), not IDLC, the Commission's assumed penetration is even less. That figure is too low to be consistent with forward-looking cost principles. *See* AT&T Jan. 7, 1999 *ex parte* at 5-6. The latest runs of the synthesis model for the non-rural study areas produce percentages for DLC penetration ranging from 2 to 69 percent, with an average value of 40 percent. Indeed, because an efficient, forward-looking network would rely more heavily upon IDLC, the Commission's data must include an adjustment to account for the lower costs of IDLC lines versus analog lines or versus UDLC lines.<sup>80</sup>

The only question, therefore, is the appropriate amount of that adjustment. At a bare minimum, that adjustment must account for the undisputed fact that IDLC lines do not require an MDF to terminate at the switch. As a result, the \$12.00 MDF investment used for analog lines should be removed for all IDLC lines. In addition, as Bell

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<sup>79</sup> This is the lines weighted DLC penetration for the companies that are included in the depreciation data set as reflected in their 1998 ARMIS 43-07 report. This estimate was made using switches less than four years older than the filing date. The average nationwide 1998 DLC penetration is approximately 17 percent, compared to the 18.3 percent calculated for the depreciation data set companies for 1998.

<sup>80</sup> AT&T's and MCI WorldCom's figures assume that all DLC in the ARMIS infrastructure report, including UDLC, is IDLC – the only type of DLC that is forward-looking for universal service purposes. As a result, AT&T's and MCI WorldCom's figures *overcompensate* the incumbent LECs by overstating actual IDLC penetration by approximately 50 percent.

Atlantic's affiant has contended, *see* Sayer Declaration at 5, ¶ 11, even apart from the expenses associated with the MDF, a DLC switch port termination should cost between \$8.00 and \$28.00 less than an analog line interface. *Cf.* AT&T Jan. 7, 1999 *ex parte* at 5 (citing testimony of AT&T expert that port costs for DLC decrease as much as 67 percent). In addition, this figure most likely is conservative because the 18.3 percent DLC penetration probably reflects more UDLC than IDLC and the switch investment only reflects the DLC credit for the embedded IDLC.

AT&T and MCI WorldCom believe that the basic switch variable cost per line should be adjusted upward to convert the depreciation data set results to assume all analog lines, and a realistic decrement to this figure should be triggered for each line provisioned on IDLC in the synthesis model. Using the Commission's proposed \$83 figure as an example (as discussed above, that figure should be reduced), the Commission should increase that figure by 18.3 percent times the \$12.00 MDF and the \$18.00 switch port termination savings,<sup>81</sup> or \$5.49, resulting in \$88.49 per line. AT&T and MCI WorldCom further propose that the \$30.00 credit per DLC line (\$12 per MDF termination plus \$18.00 per switch port termination) then be applied to the model's calculated number of DLC-provisioned lines. Thus, the new DLC offset input would be \$30.00, but would be applied only to the number of DLC lines the model calculates. This guarantees that individual wire centers with different levels of calculated DLC would receive the appropriate amount of DLC credit. For example, Washington D.C., with small amounts of DLC, would receive little credit, while rural offices with large amounts

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<sup>81</sup> \$18.00 per port is the midpoint between Sayer's range of \$8.00 - \$28.00 savings for DLC lines.

of DLC would receive an appropriately large DLC credit. Although this calculation is conservative, it is verifiable and supported by the record. Indeed, given the undisputed fact that an MDF is not used in conjunction with a IDLC, it would be arbitrary for the Commission to fail to adjust for the lower costs of terminating IDLC lines.

AT&T and MCI WorldCom also disagree with the proposal (*Further Notice*, ¶ 84) to adopt a switch port administrative fill factor of 94 percent. The switching and interoffice module formulas currently apply the fill factor input against the entire switch investment. In reality, this fill factor should be applied solely to the line port portion of the switch. Thus, either the formula needs to be modified, or the input needs to be adjusted upward so that the resulting overall switch investment increase attributable to line fill would be the same as if the formula were corrected.<sup>82</sup>

Finally, the current switching and interoffice transport inputs include some inputs for signaling costs that should have been modified from the original HAI values. See AT&T Jan. 7 *ex parte* at 7. Those values were based upon data from 1994 that do not incorporate the reduced cost of current STPs and SCPs. BellSouth has provided more recent data that are substantially lower than the original HAI inputs. See BellSouth Aug. 7, 1998 *ex parte*, Attachment to Question 1. AT&T and MCI WorldCom agree that BellSouth's proposed prices should be adopted.

### C. Use Of The LERG

AT&T and MCI WorldCom disagree with the proposal in the *Further Notice* (¶¶ 176-77) to look to the LERG database to determine whether a particular wire center

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<sup>82</sup> This would require a 98.2 percent fill factor input, based on the assumption that 30 percent of the switch is port-related.  $30\% * 94\% + 70\% * 100\% = 98.2\%$ .

in the model should house a host/standalone or a remote switch. Use of the LERG directly contradicts the Commission's stated goal to model costs using efficient, forward-looking principles, because the LERG database reflects the incumbent LECs' historic determinations to deploy host/standalone versus remote switches. Even assuming a model in which the incumbent LECs' existing wire centers remain in the same locations, their historic determinations regarding remote versus host/standalone switches would be made very differently and more efficiently under today's conditions, and cannot be relied on in a forward-looking model. In particular, embedded LERG assignments of switches as hosts/standalones or remotes are likely inconsistent with the Commission's forward-looking interoffice transport architecture that directs host/remote systems to be placed on separate SONET rings.

Applying forward-looking principles to existing wire centers would result in deployment of fewer (and more expensive) standalone switches and more (and less costly) remotes. Placement of additional remotes is dictated not only by new geographic growth patterns but by the dramatic technological changes in the capacities for remote switches. Because the LERG reflects the incumbents' historic and now inefficient decisions to deploy host or stand-alone switches rather than remotes, reliance on the LERG to model the type of switch used in a wire center would significantly overstate forward-looking costs. This problem is compounded by the Commission's current decision to have hosts and their sub-tending remotes placed on their own SONET ring. First, placing hosts and remotes on their own SONET rings is not a common practice. Indeed, it is unlikely that review of the incumbent LECs' switch placement guidelines would reflect the use of SONET rings for host/remote systems because many remotes, as

specified by the LERG, are too small to be economically placed on a ring. In any event, the use of the LERG in combination with this assumption produces a vast overstatement of the necessary interoffice cost because expensive electronics and costly redundant transport are being amortized over too few subscribers.

#### **IV. EXPENSES**

##### **A. Nationwide Rather Than Company-Specific Inputs**

The Commission tentatively concluded that it should adopt input values that reflect the average expenses incurred by non-rural carriers rather than company specific expenses. *Further Notice*, ¶¶ 198-200. AT&T and MCI WorldCom agree with this conclusion. The universal service mechanism should be based on the costs that an efficient carrier *could* achieve, not on what any individual carrier *has* achieved. In addition, on a going-forward basis, an incumbent LEC's individual costs are irrelevant, as it will not be the only company providing service. Thus, the expenses should not reflect idiosyncratic individual LEC expense levels.

##### **B. Removal Of One-Time Expenses**

The Commission has expressly recognized that the impact of one-time expenses "can be significant," and should be "estimated" and eliminated from forward-looking universal service costs. *Further Notice*, ¶¶ 220-21. The Commission nonetheless rejected AT&T's and MCI WorldCom's estimate of these expenses because "the SEC reports [on which the estimates were based] do not specifically indicate whether the one-time expenses were actually made during the year(s) indicated." *Id.*

AT&T and MCI WorldCom disagree with the Commission's decision to reject their one-time cost estimates. The Commission's goal in this proceeding is to derive input values that will calculate accurate universal service costs. In light of that goal, it is

far better to estimate one-time costs through the use of SEC reports that may imperfectly establish the precise date of their occurrence than to fail to exclude any of these costs at all. As shown by these SEC reports, nearly 20 percent of yearly corporate operations expenses and 2.5 percent of yearly network operations expenses consist of non-recurring charges. Accordingly, the failure to remove these expenses from universal service cost calculations would significantly inflate the forward-looking cost of providing universal service by assuming a never-ending annual stream of "one-time" nonrecurring charges.

### C. Converting Expenses To 1999 Values

In the *Further Notice* (§ 226), the Commission proposes "to use a 6.0 percent productivity factor for each year (1997 and 1998) to reduce the estimated input values for each account," and seeks comment on this method of converting expenses to 1999 values. AT&T and MCI WorldCom believe that the proposed 6 percent productivity factor is too low to reflect actual incumbent LEC productivity gains. The productivity factor should be set at 8.4 percent to reflect currently achieved productivity improvements.<sup>83</sup> But at the very least, the factor should be set at 6.5 percent, which is the productivity factor that the Commission itself has required incumbent LECs to use in the federal price cap plan, effective since July 1, 1996. The Commission determined that this would be the level of

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<sup>83</sup> The validity of AT&T's and MCI WorldCom's position has been demonstrated at length in the "Refresh the Record" proceeding. See, e.g., Comments of AT&T Corp. to Update and Refresh the Record, *Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Request for Amendment of the Commission's Rules Regarding Access Charges Reform and Price Cap Performance Review for Local Exchange Carriers*, CC Docket Nos. 92-262, 94-1, RM No. 9210 (filed Oct. 26, 1998). The record in that proceeding shows that the incumbent LECs have achieved productivity well in excess of the current 6.5 percent productivity factor. *Id.* Rather than reiterate the arguments made in the Refresh the Record proceeding, AT&T and MCI WorldCom incorporate their comments in that proceeding as if fully set forth herein.

company-wide productivity that the incumbent LECs would achieve since that time period. It would be inconsistent for the Commission to use the existing 11.25 percent cost of capital – on the grounds that it is the level of return the Commission determined the incumbent LECs needed the last time it examined the issue – and then to fail to use the productivity target that the Commission determined the incumbent LECs would achieve on a total company basis.

#### **D. Local Number Portability Costs**

In the *Further Notice* (Appendix A at A-31), the Commission proposed a per line monthly local number portability (“LNP”) cost of \$0.39, apparently based on the LNP rates that the incumbent LECs filed. Many of those rate were suspended and investigated, however, and those investigations have recently been concluded. The default input for LNP greatly exceeds the cost-based LNP rates that resulted from these investigations, which range from \$0.23 to \$0.48 per month. The Commission therefore should use the line-weighted nationwide average LNP rate for this input. That weighted average currently is \$0.32.

### **V. CAPITAL COSTS**

#### **A. Depreciation**

AT&T and MCI WorldCom fully support the Commission’s tentative conclusions on depreciation input issues. As AT&T and MCI WorldCom demonstrated in their prior comments, the Commission’s Part 32 depreciation lives and net salvage values assure forward-looking capital recovery. AT&T/MCI WorldCom Dec. 17, 1997 Comments at 21; AT&T/MCI WorldCom Dec. 27, 1997 Reply Comments at 10. Indeed, as the Commission observed in its *Further Notice*, the Commission’s current depreciation lives are, if anything, overly generous and have permitted incumbent LECs to build a



depreciation reserve ratio of greater than 50 percent. *Further Notice*, ¶ 235. *See also* GSA Dec. 17, 1997 Comments at 5.

Similarly, AT&T and MCI WorldCom concur with the Commission's tentative decision to adopt a straight line equal life group depreciation method. *See Further Notice*, ¶ 231. There is no reason to expect that the facilities used today to provide local exchange service will depreciate more rapidly today than they will in the succeeding years. Tellingly, none of the incumbent LEC commenters that favor accelerated depreciation have provided any evidence that rebuts the presumption in favor of straight line depreciation. Moreover, if the Commission were to depart from straight line depreciation, it would have to engage in a speculative, and time intensive investigation for each asset class as to the precise depreciation curve for that asset class. *See Marvin A. Chirelstein, Federal Income Taxation* 144 (1991) (explaining difficulties in using non-straight line depreciation for machinery, equipment, and other tangible[] assets.)

Finally, AT&T and MCI WorldCom seek to clarify that the Commission does not intend to preclude accounting for the impact of deferred taxes. Under current federal tax laws, telephone companies are able to take accelerated depreciation of their assets for tax purposes. Because depreciation expenses are deducted from earnings, accelerated depreciation allows a company to effectively defer tax liabilities into the future and to reduce the present value of these liabilities. In other words, accelerated tax depreciation allows a company to use money that it otherwise would have to pay in taxes.<sup>84</sup> HAI, as

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<sup>84</sup> *See Marvin A. Chirelstein, Federal Income Taxation* 147 (1991) (under federal tax laws, "the cost of an asset is recoverable over a predetermined period that is, and is intended to be, significantly shorter than the useful life of the asset or the period during which the asset is expected to be used in the taxpayer's business. . . . The result (as (continued . . .)

well as BCPM, takes into account the economic value of these deferred taxes – *i.e.*, the time value of money – when calculating annual charge factors.<sup>85</sup> Thus, because accelerated tax depreciation lowers the costs of providing basic phone service, the Commission should confirm that universal service costs should include adjustments to reflect the economic value of this accelerated tax depreciation.

## **B. Cost Of Capital**

AT&T and MCI WorldCom disagree with the Commission's tentative decision to use the current federal rate of return of 11.25 percent to calculate universal service costs. *See Further Notice*, ¶ 237. In the *Further Notice*, the Commission states that it refused to adopt the lower cost of capital value used in HAI because the model's "proponents have failed to make an adequate showing to justify rates that differ from the current 11.25 percent federal rate of return." *Further Notice*, ¶ 239. However, in its prior *Inputs Public Notice*,<sup>86</sup> the Commission did *not* seek comment on the rate of return. In light of the fact that the Commission did not solicit evidence on this issue, it cannot justify retaining an excessively high cost of capital on the ground that the parties failed to provide such evidence.

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(continued . . .)

usual) is that the effective rate of tax on income from investment in plant and machinery is much lower than the statutory tax rate; put differently, it is as if a portion of such income were tax-exempt.").

<sup>85</sup> These HAI expense modules were submitted to the Commission in MCI WorldCom's March 12, 1999 *ex parte*.

<sup>86</sup> *Common Carrier Bureau Requests Further Comment On Selected Issues Regarding The Forward-Looking Economic Cost Mechanism For Universal Service*, Public Notice, CC Docket Nos. 96-45, 97-160, DA 98-848 (rel. May 4, 1998) ("*Inputs Public Notice*").

That is especially true when there is a separate, ongoing Commission proceeding devoted to this cost of capital issue, in which AT&T and MCI WorldCom have conclusively demonstrated that the relevant cost of capital is, in fact, much *lower* than the HAI estimate. As AT&T and MCI WorldCom have explained, the current federal rate of return, which was set in 1990, is not forward-looking and grossly exceeds the true cost of capital of approximately 8.5 to 9 percent. *See generally* Responsive Submission of AT&T Corp. to Prescription Proceeding Direct Case Submissions and Reply Comments on the Notice of Proposed Rulemaking, *In the Matter of Prescribing the Authorized Unitary Rate of Return for Interstate Servs. of Local Exchange Carriers*, CC Docket 98-166 (Mar. 16, 1999). Indeed, the incumbent LECs in that proceeding did not even attempt to provide the Commission with any data, calculation, or methodology to support their claim that their cost of capital had *increased* since 1990, but instead offered only anecdotal and unquantifiable rhetoric regarding the level of competition to support their position.<sup>87</sup>

Thus, if the Commission remains committed to setting the cost of capital for universal service costs in the federal rate represcription proceeding, it is vital for the Commission to adopt an appropriate forward-looking cost of capital in that proceeding by January 1, 2000, when universal service costs are to be calculated. Indeed, failure to do so would result in grossly overstating the costs of providing universal service. Changing the cost of capital from 11.25 percent to 8.64 percent (but holding all other inputs

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<sup>87</sup> Moreover, it is inappropriate to apply a federal rate of return to the un-separated costs modeled by the synthesis model. The overwhelming share of these costs are in the intrastate jurisdiction, and most state commissions have determined that lower rates of return are appropriate for these costs.

constant) would reduce the overall cost of supported services by approximately 10 to 12 percent. At a minimum, if the Commission cannot conclude its federal rate represetation proceeding by the end of the year, the Commission should give up its “two wrongs make a right” approach and use the 10.01 percent cost of capital default value used in HAI, which is still well above the true forward-looking value.

### **C. Annual Charge Factors**

AT&T and MCI WorldCom fully support the Commission’s tentative decision to use HAI’s expense module to develop annual charge factors. *Further Notice*, ¶ 242. As the Commission observed in the *Further Notice* (¶ 241), HAI and BCPM calculate annual charge factors in the same manner. Moreover, because the relevant parts of the Commission’s synthesis model are based on HAI, use of the HAI annual charge factors is fully consistent with the synthesis model, and is easier to implement.

## **VI. OTHER ISSUES**

The Commission seeks comment on how it should interpret the term “local exchange operating entity” in section 153(37) of the Communications Act, and whether this term refers to an entity operating at the study area level or at the holding company level. *Further Notice*, ¶ 251.

AT&T and MCI WorldCom believe that the Commission should aggregate a holding company’s operations within a state for purposes of applying the criteria of section 153(37). Nothing prevents a holding company from gaining operating efficiencies by combining operations from different study areas, and, indeed, a forward-looking service provider should be required to do so. In addition, allowing a holding company to treat its study areas separately would only encourage it to devise corporate structures that would allow it to manipulate the universal service system. For example, a

holding company could set up multiple subsidiaries in a state, each with separate study areas for regulatory purposes. Then, if one (or more) of the subsidiaries operated in a study area that met the criteria for rural designation, it could claim universal service support commensurate with that designation even though the holding company was able to enjoy the efficiencies of operating a large telephone company in that state.

## CONCLUSION

For the foregoing reasons, the Commission should revise its proposed input values as described in these comments.

Respectfully submitted,  
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## CONCLUSION

For the foregoing reasons, the Commission should revise its proposed input values as described in these comments.

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